

## Supplementary Figures and captions

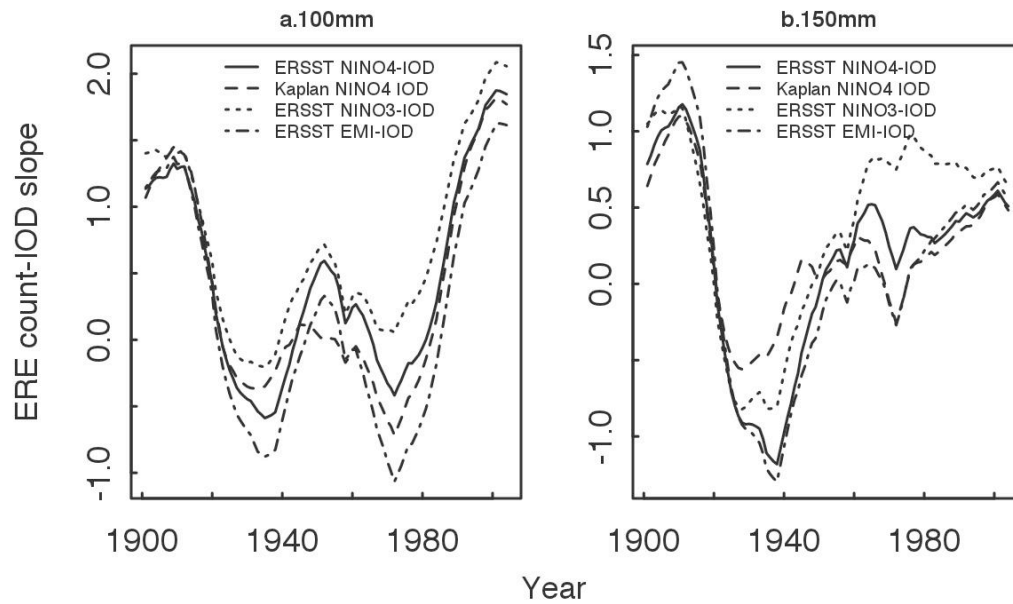


Figure 1. The changing influence of IOD on frequency of EREs. The time-varying regression slope of the ERE count from models in which the annual ERE counts (square-root transformed) are the response and the NINO4 or other ENSO indices and Indian Ocean Dipole (IOD) are covariates. Results are presented from models which differ in source of SST data sets for defining the ENSO and IOD indices. Results for 100 (a) and 150 mm (b) daily exceedance levels are shown here. These correspond to similar time-series of the ERE-IOD slope based on ERSSTvb3 data shown in column 3 of Figure 3 in the main manuscript.

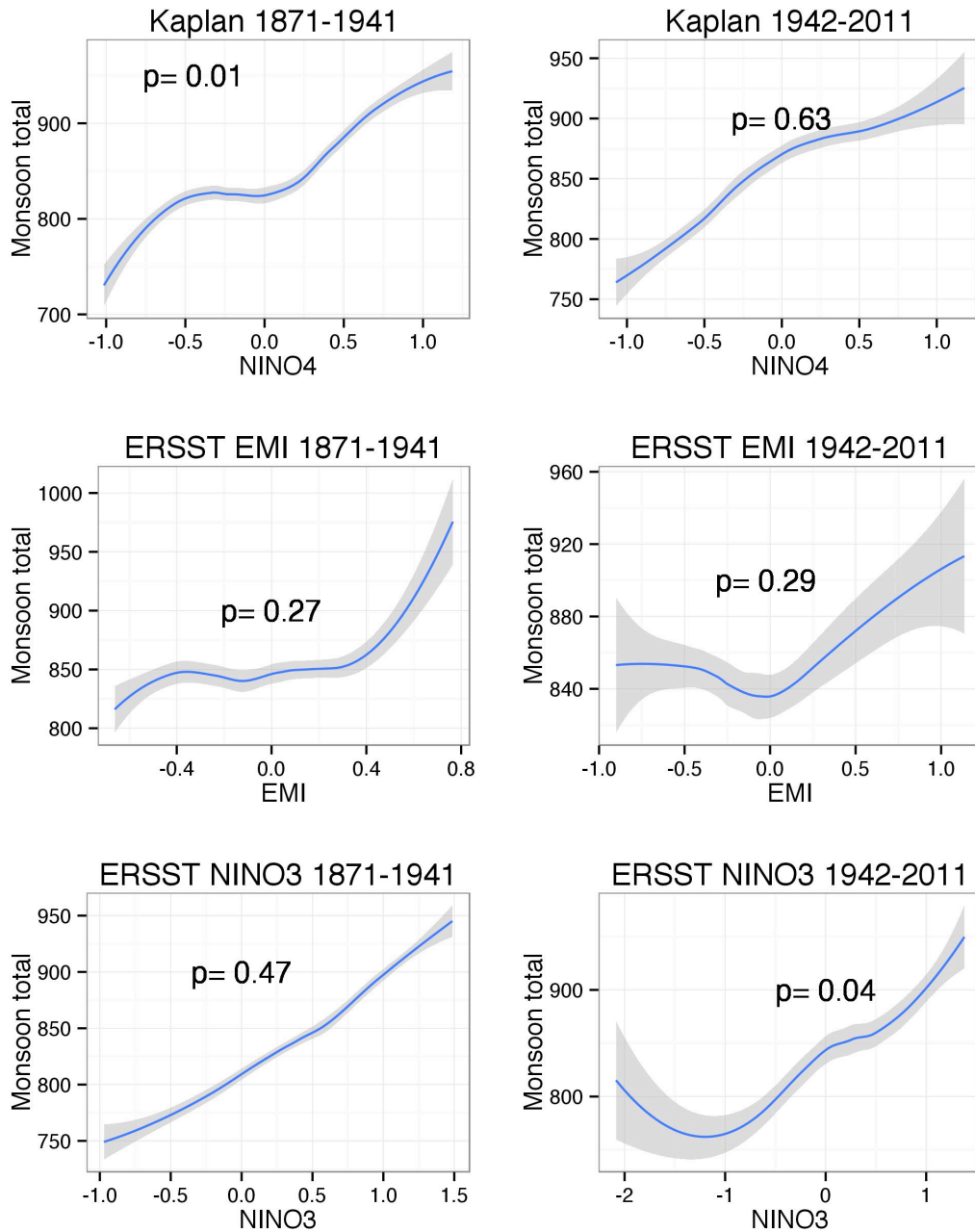


Figure 2. Changes in the non-linear influence of ENSO indices on Indian Monsoon totals in the period 1871-1941 and 1942-2011 as assessed from Generalized Additive Models (GAMs) in which annual Monsoon totals were regressed against IOD and other ENSO indices defined from different SST sources. Graphs are fitted values plotted against the ENSO index along with LOESS based confidence bands. P-values from the GAM models are included.

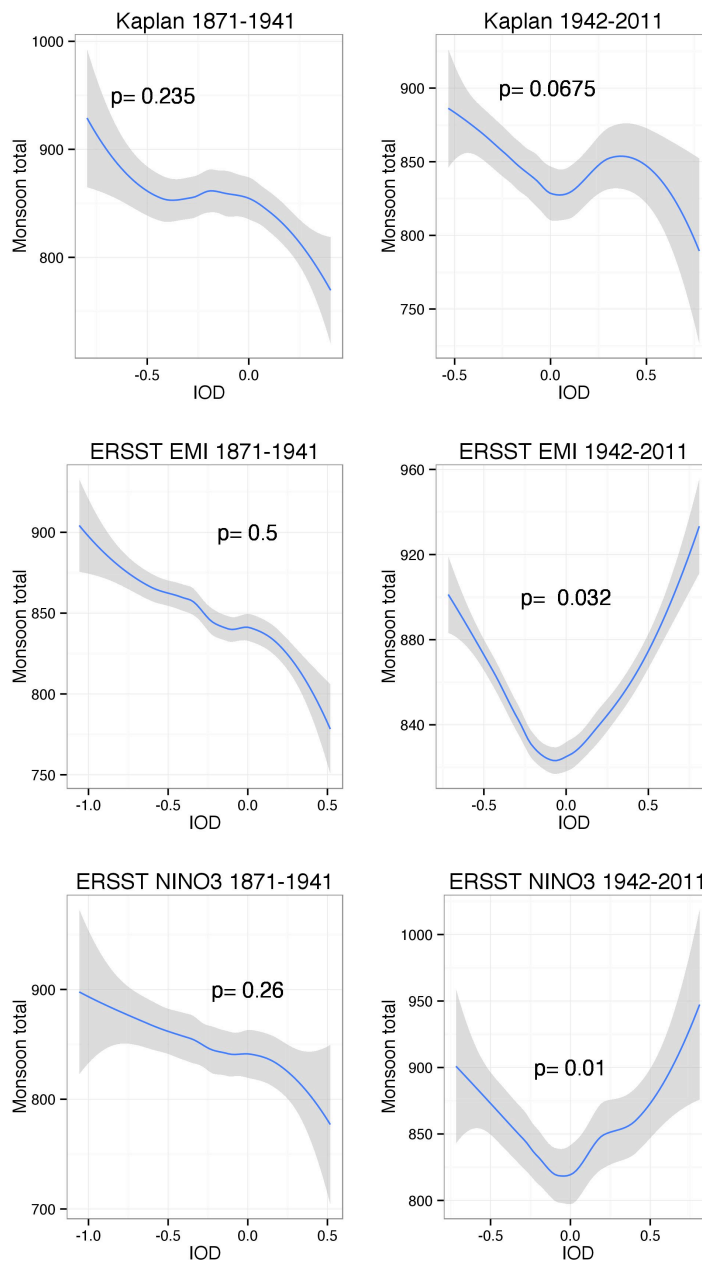


Figure 3. Changes in the non-linear influence of Indian Ocean Dipole on Indian Monsoon totals in the period 1871-1941 and 1942-2011 as assessed from Generalized Additive Models (GAMs) in which annual Monsoon totals were regressed against NINO4 and other ENSO indices defined from different SST sources. Graphs are fitted values plotted against the IOD index along with LOESS based confidence bands. P-values from the GAM models are included.

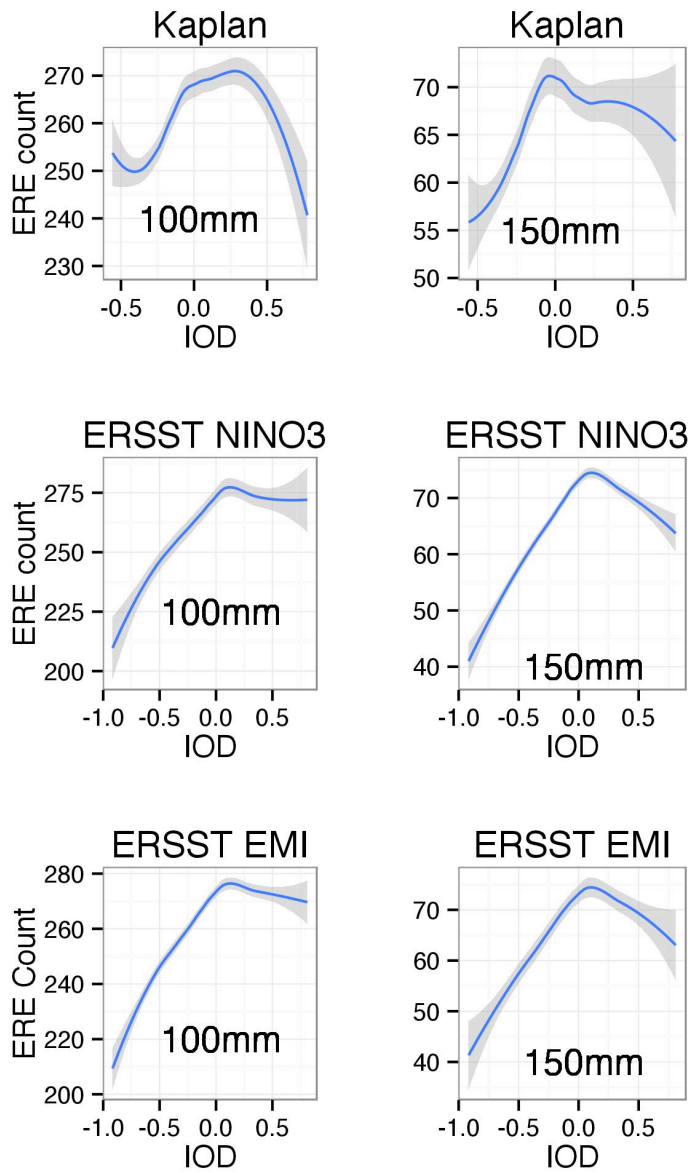


Figure 4. The non-linear influence of Indian Ocean Dipole on annual counts of extreme rain events as assessed from Generalized Additive Models (GAMs) in which counts of were regressed against NINO4 and other ENSO indices defined from different SST sources. Graphs are fitted values plotted against the IOD index along with LOESS based confidence bands. P-values from the fitted GAM models were all <0.01.

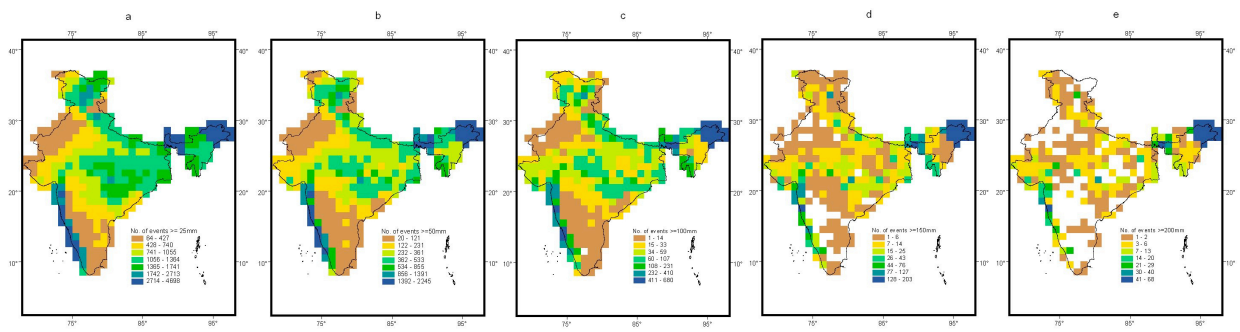


Figure 5: Spatial distribution of EREs (at one degree resolution) in India at different exceedance thresholds indicate high concentration along the Western Ghats, Indo-Gangetic plain, Central and North Eastern parts of India, and some of these regions already receive high rainfall during the Indian monsoon.